



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/523,771	03/24/2006	Martyn Vincent Twigg	JMYT-341US	5712
23122	7590	10/17/2006	EXAMINER	
RATNERPRESTIA P O BOX 980 VALLEY FORGE, PA 19482-0980			TRAN, BINH Q	
			ART UNIT	PAPER NUMBER
			3748	

DATE MAILED: 10/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

SIP

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/523,771	TWIGG, MARTYN VINCENT	
	Examiner BINH Q. TRAN	Art Unit 3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-21 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-21 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.
 

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 02/08/2005.
- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) Notice of Informal Patent Application
- 6) Other: \_\_\_\_\_.

## DETAILED ACTION

Receipt and entry of Applicant's Preliminary Amendment dated August 08, 2005 is acknowledged.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

***Claims 1-10, and 13-20 are rejected under 35 U.S.C. 102 (e) as being anticipated by***

***Deeba (Patent Number 6,912,847).***

Regarding claims 1, and 17-18, Deeba discloses an exhaust system (e.g. 17-20) for a lean-burn internal combustion engine comprising a soot filter (15) packed with a mass of elongate, flat, narrow strip metal (e.g. Col. 8, lines 11-50), and a catalyst (e.g. 12, 14) located upstream of the filter for oxidising NO to NO<sub>2</sub> for combusting soot collected on the filter in NO<sub>2</sub>, wherein the catalyst is supported on a metal substrate of the type used in the filter having a lower packing density, to permit passage of soot particles (e.g. See col. 9, lines 24-67; col. 10, lines 1-59).

Regarding claim 2, Deeba further discloses a plurality of metal-based filters (e.g. 14, 15) adapted successively to trap smaller and smaller particles (e.g. See Figs. 3-6; col. 9, lines 45-67; col. 10, lines 1-59).

Regarding claim 3, Deeba further discloses at least one wall flow filter for trapping yet smaller particles (e.g. See Figs. 3-6; col. 9, lines 45-67; col. 10, lines 1-59).

Regarding claim 4, Deeba further discloses a flow-through monolith between the or each pair of metal-based filters (e.g. See Figs. 3-6; col. 9, lines 45-67; col. 10, lines 1-59).

Regarding claim 5, Deeba further discloses that wherein the or each flow-through monolith comprises a NO oxidation catalyst, whereby to restore the NO<sub>2</sub> content, which had been decreased by reaction with soot in the preceding filter (e.g. See Figs. 3-6; col. 9, lines 45-67; col. 10, lines 1-59).

Regarding claim 6, Deeba further discloses that the filter capacity is sufficient to allow the soot to be combusted continuously by the oxidant (e.g. See Figs. 3-6; col. 9, lines 45-67; col. 10, lines 1-59).

Regarding claim 7, Deeba further discloses that the filter capacity is sized for accumulations of soot sufficient to increase pressure-drop significantly before the next period of fast running and the system includes a bypass, wherein the pressure-drop through which is equal to the design maximum tolerated pressure-drop through the filter, whereby to avoid engine stalling (e.g. See Figs. 3-6; col. 9, lines 45-67; col. 10, lines 1-59).

Regarding claim 8, Deeba further discloses means to limit soot emission to atmosphere located downstream of the bypass, which means being selected from the group consisting of a filter, an impingement collector and an oxidation catalyst (e.g. See Figs. 3-6; col. 9, lines 45-67; col. 10, lines 1-59).

Regarding claim 9, Deeba further discloses that the filter comprises a regular coiled, woven or knitted structure (e.g. See Figs. 3-6; col. 9, lines 45-67; col. 10, lines 1-59).

Regarding claim 10, Deeba further discloses that the metal of the filter is Type 300 or Type 400 stainless steel (e.g. See Col. 8, lines 11-50).

Regarding claim 13, Deeba further discloses that the wherein the flat, narrow strip metal is a flattened wire (e.g. See Figs. 3-6; col. 9, lines 45-67; col. 10, lines 1-59).

Regarding claim 14, Deeba further discloses that the filter packing carries a layer catalytic for soot oxidation (e.g. See Figs. 3-6; col. 9, lines 45-67; col. 10, lines 1-59).

Regarding claim 15, Deeba further discloses that the catalytic layer comprising a washcoat and a component selected from the group consisting of Pt and oxides of Cs and V (e.g. See Figs. 3-6; col. 9, lines 45-67; col. 10, lines 1-59).

Regarding claim 16, Deeba further discloses that the means for generating a component for combusting soot collected on the filter selected from the group consisting of ozone and plasma (e.g. See Figs. 3-6; col. 9, lines 45-67; col. 10, lines 1-59).

Regarding claim 19, Deeba further discloses a flow through-monolith between the or each pair of metal-based filters (e.g. See Figs. 3-6; col. 9, lines 45-67; col. 10, lines 1-59).

Regarding claim 20, Deeba further discloses that wherein the or each flow-through monolith comprises a NO oxidation catalyst, whereby to restore the NO<sub>2</sub> content, which had been decreased by reaction with soot in the preceding filter (e.g. See Figs. 3-6; col. 9, lines 45-67; col. 10, lines 1-59).

*Claims 1-10, and 13-20 are rejected under 35 U.S.C. 102 (b) as being anticipated by Nagai et al. (Nagai) (Patent Number 5,709,722).*

Regarding claims 1, and 17-18, Nagai discloses an exhaust system (e.g. Fig. 12) for a lean-burn internal combustion engine comprising a soot filter (10) packed with a mass of elongate, flat, narrow strip metal (e.g. col. 7, lines 10-48; col. 8, lines 36-50), and a catalyst (e.g. 302, 303) located upstream of the filter for oxidising NO to NO<sub>2</sub> for combusting soot collected on the filter in NO<sub>2</sub> (e.g. See “Experiments 8 and 10-11”), wherein the catalyst is supported on a metal substrate of the type used in the filter having a lower packing density, to permit passage of soot particles (e.g. See col. 7, lines 10-67; col. 8, lines 1-53).

Regarding claim 2, Nagai further discloses a plurality of metal-based filters (e.g. 10) adapted successively to trap smaller and smaller particles (e.g. See Figs. 1-11; col. 7, lines 10-67; col. 8, lines 1-53).

Regarding claim 3, Nagai further discloses at least one wall flow filter for trapping yet smaller particles (e.g. See Figs. 1-11; col. 7, lines 10-67; col. 8, lines 1-53).

Regarding claim 4, Nagai further discloses a flow-through monolith between the or each pair of metal-based filters (e.g. See Figs. 1-11; col. 7, lines 10-67; col. 8, lines 1-53).

Regarding claim 5, Nagai further discloses that wherein the or each flow-through monolith comprises a NO oxidation catalyst, whereby to restore the NO<sub>2</sub> content, which had been decreased by reaction with soot in the preceding filter (e.g. See Figs. 1-11; col. 7, lines 10-67; col. 8, lines 1-53).

Regarding claim 6, Nagai further discloses that the filter capacity is sufficient to allow the soot to be combusted continuously by the oxidant (e.g. See Figs. 1-11; col. 7, lines 10-67; col. 8, lines 1-53).

Regarding claim 7, Nagai further discloses that the filter capacity is sized for accumulations of soot sufficient to increase pressure-drop significantly before the next period of fast running and the system includes a bypass (e.g. 3, 4, 7), wherein the pressure-drop through which is equal to the design maximum tolerated pressure-drop through the filter, whereby to avoid engine stalling (e.g. See Figs. 1-11; col. 7, lines 10-67; col. 8, lines 1-53).

Regarding claim 8, Nagai further discloses means to limit soot emission to atmosphere located downstream of the bypass, which means being selected from the group consisting of a filter, an impingement collector and an oxidation catalyst (e.g. See Figs. 1-11; col. 7, lines 10-67; col. 8, lines 1-53).

Regarding claim 9, Nagai further discloses that the filter comprises a regular coiled, woven or knitted structure (e.g. See Figs. 1-11; col. 7, lines 10-67; col. 8, lines 1-53).

Regarding claim 10, Nagai further discloses that the metal of the filter is Type 300 or Type 400 stainless steel (e.g. See Figs. 1-11; col. 7, lines 10-67; col. 8, lines 1-53).

Regarding claim 13, Nagai further discloses that the wherein the flat, narrow strip metal is a flattened wire (e.g. See Figs. 1-11; col. 7, lines 10-67; col. 8, lines 1-53).

Regarding claim 14, Nagai further discloses that the filter packing carries a layer catalytic for soot oxidation (e.g. See Figs. 1-11; col. 7, lines 10-67; col. 8, lines 1-53).

Regarding claim 15, Nagai further discloses that the catalytic layer comprising a washcoat and a component selected from the group consisting of Pt and oxides of Cs and V (e.g. See Figs. 1-11; col. 7, lines 10-67; col. 8, lines 1-53).

Regarding claim 16, Nagai further discloses that the means for generating a component for combusting soot collected on the filter selected from the group consisting of ozone and plasma (e.g. See Figs. 1-11; col. 7, lines 10-67; col. 8, lines 1-53).

Regarding claim 19, Nagai further discloses a flow through-monolith between the or each pair of metal-based filters (e.g. See Figs. 1-11; col. 7, lines 10-67; col. 8, lines 1-53).

Regarding claim 20, Nagai further discloses that wherein the or each flow-through monolith comprises a NO oxidation catalyst, whereby to restore the NO<sub>2</sub> content, which had been decreased by reaction with soot in the preceding filter (e.g. See Figs. 1-11; col. 7, lines 10-67; col. 8, lines 1-53).

#### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

*Claims 11-12 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deeba in view of design choice.*

Regarding claims 11-12, and 21, Deeba discloses all the claimed limitation as discussed above except that the iron alloy containing at least 11.5% Cr, 4% Al and 0.02-0.25%, and the width of the metal strip of the filter is up to 2 mm and its thickness is 0.2 to 0.8 times its width.

Regarding the specific range of the compositions of the iron alloy, and the width and thickness of the metal strip, it is the examiner's position that a range of at least 11.5% Cr, 4% Al and 0.02-0.25% the compositions of the iron alloy, and up to 2 mm and its thickness is 0.2 to 0.8 times its width of the filter metal strip, would have been an obvious matter of design choice well within the level of ordinary skill in the art, depending on variables such as mass flow rate of the exhaust gas, as well as the size of the engine, properties of materials for making the NOx catalyst and soot filter, and the controlled temperature of the catalytic converter and soot filter. Moreover, there is nothing in the record which establishes that the claimed parameters present a novel or unexpected result (See *In re Kuhle*, 562 F. 2d 553, 188 USPQ 7 (CCPA 1975)).

Under some circumstances, however, changes such as these may impart patentability to a process if the particular ranges claimed produce a new and unexpected result which is different in kind and not merely in degree from the results of the prior art. *In re Dreyfus*, 22 CCPA (Patents) 830, 73 F.2d 931, 24 USPQ 52; *In re Waite et al.*, 35 CCPA (Patents) 1117, 168 F.2d 104, 77 USPQ 586. Such ranges are termed "critical" ranges, and the applicant has the burden of proving such criticality. *In re Swenson et al.*, 30 CCPA (Patents) 809, 132 F.2d 1020, 56 USPQ 372; *In re Scherl*, 33 CCPA (Patents) 1193, 156 F.2d 72, 70 USPQ 204. However, even though applicant's

modification results in great improvement and utility over the prior art, it may still not be patentable if the modification was within the capabilities of one skilled in the art. *In re Sola*, 22 CCPA (Patents) 1313, 77 F.2d 627, 25 USPQ 433; *In re Normann et al.*, 32 CCPA (Patents) 1248, 150 F.2d 627, 66 USPQ 308; *In re Irmscher*, 32 CCPA (Patents) 1259, 150 F.2d 705, 66 USPQ 314. More particularly, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. *In re Swain et al.*, 33 CCPA (Patents) 1250, 156 F.2d 239, 70 USPQ 412; *Minnesota Mining and Mfg. Co. v. Coe*, 69 App. D.C. 217, 99 F.2d 986, 38 USPQ 213; *Allen et al. v. Coe*, 77 App. D.C. 324, 135 F.2d 11, 57 USPQ 136.

***Prior Art***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of five patents:

Schafer-Sindlinger et al. (Patent Number 6,516,611), Akama et al. (Pat. No. 6916450), Chun et al. (Pat. No. 6772584), Phillips et al. (Pat. No. 6877313), and Twigg et al. (Pat. No. 6775972) all discloses an exhaust gas purification for use with an internal combustion engine.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Binh Tran whose telephone number is (571) 272-4865. The examiner can normally be reached on Monday-Friday from 8:00 a.m. to 4:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reached on (571) 272-4859. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and for After Final communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



BT  
October 12, 2006

Binh Q. Tran  
Patent Examiner  
Art Unit 3748